MISSOURI MONTHLY VITAL STATISTICS

Provisional Statistics

From The

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Focus. . . Asthma Hospitalizations of Children and Young Adults: 1993-1999

Asthma is a chronic respiratory disease. Various triggers lead to wheezing and shortness of breath. Some of the triggers "include allergens, infections, exercise, abrupt changes in the weather, or exposure to airway irritants, such as tobacco smoke."[1] Asthma is one of the nation's most common and costly diseases.[2] Better asthma management could reverse the increasing numbers of emergency room visits and hospitalization due to asthma.[3]

This article will highlight the unique patterns of asthma hospitalizations for children and young adults, by age and race. Asthma hospitalizations are expensive and are considered preventable. These hospitalizations could be avoided with better access to primary care physicians, preventive medicine, and health education.[4] In Missouri, children and young adults tend to have the highest rates of hospitalization for asthma. This article provides an analysis of patterns of asthma inpatient hospitalizations for these two groups.

The data source for the analysis is the Patient Abstract System (PAS), a state-mandated hospital data reporting system. PAS contains a discharge record for every patient admitted to the hospitals in Missouri or treated in the emergency department. Reporting is mandated for all licensed hospitals, except federal hospitals and state mental hospitals. Discharge data for Missouri residents receiving care in some hospitals located in contiguous states are also included in the PAS. Data for the analysis was based on discharge years 1993-1999.

Table 1 displays the number and rate of hospitalizations for asthma (i.e. where asthma was listed as the principal diagnosis) by sex and age group. The highest hospitalization rates for asthma are found in the age group 0 to 4. As children get older, they are less likely to be hospitalized for asthma. Hospitalization rates bottom out in the 20-24 age group and then increase for adults as they age.

Gender Differences

Figure 1 shows the differences in asthma hospitalizations by gender and age. Male children have much higher rates of asthma hospitalization than female children in the younger age categories (age 0-4 and 5-9). For middle-school age children (age 10-14), the difference in rate by gender is minimal. However, by the teen years, (age 15-19), females are more likely to be hospitalized for asthma than males. This trend continues throughout adulthood. Indeed, the asthma hospitalization rate for females, overall, is greater than for males, (15.4 versus 10.9, respectively).

County of Residence

Hospitalization rates for asthma vary by geographic location in the state (See Map 1). During the period studied, there were significantly higher rates ($p>.05$) of asthma hospitalization for persons ages 0-24 residing in St. Louis City and St. Louis County (64.0 and 42.3, respectively) than for the state overall (18.2). Residents of the southeast counties of Butler, Dunklin, and Pemiscot

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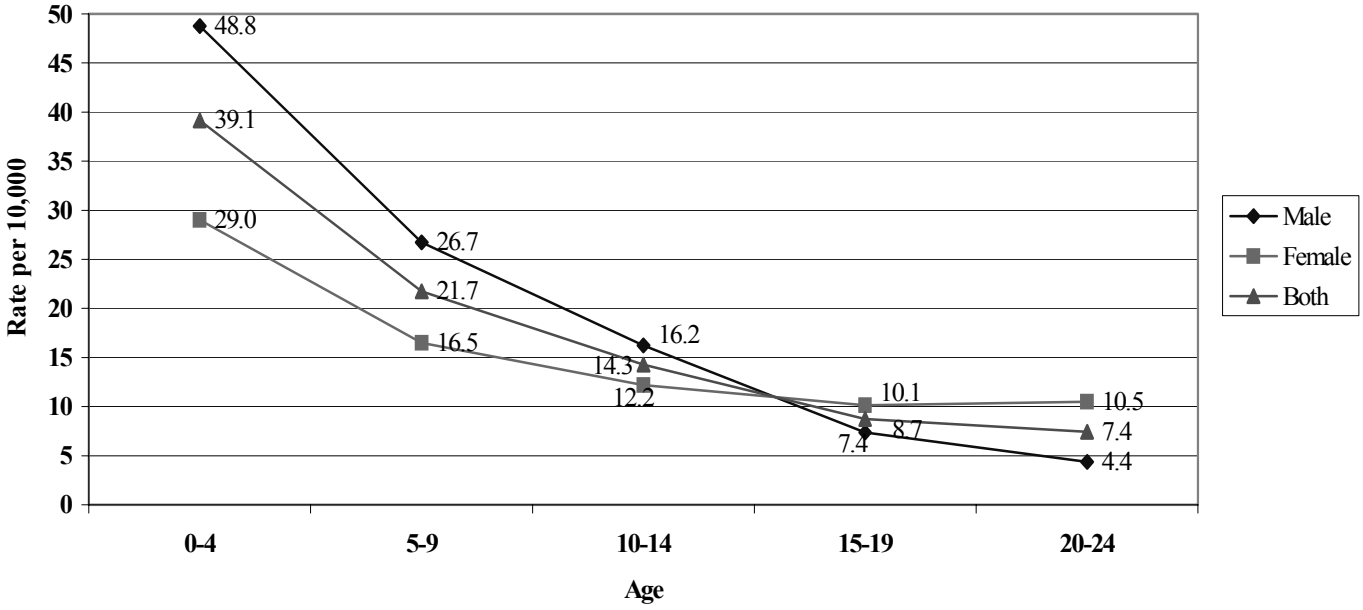
Table 1

Asthma Hospitalizations by Gender and Age
Discharge Years 1993-1999

	Sex					
	Male		Female		Both	
AGE	Number	Rate	Number	Rate	Number	Rate
0-4	6,429	48.8	3,636	29.0	10,065	39.1
5-9	3,696	26.7	2,173	16.5	5,869	21.7
10-14	2,328	16.2	1,662	12.2	3,990	14.3
15-19	1,038	7.4	1,367	10.1	2,405	8.7
20-24	526	4.4	1,270	10.5	1,796	7.4
25-44	2,434	4.4	7,747	13.5	10,181	9.0
45-64	1,909	5.1	6,683	16.6	8,592	11.1
65 and Over	1,786	8.5	5,395	17.3	7,181	13.8
All ages	**20,146**	**10.9**	**29,933**	**15.4**	**50,079**	**13.3**

Rates per 10,000

Figure 1
Discharge Years 1993-1999
Asthma Hospitalization Rates by Sex and Age
Patients Age 0-24



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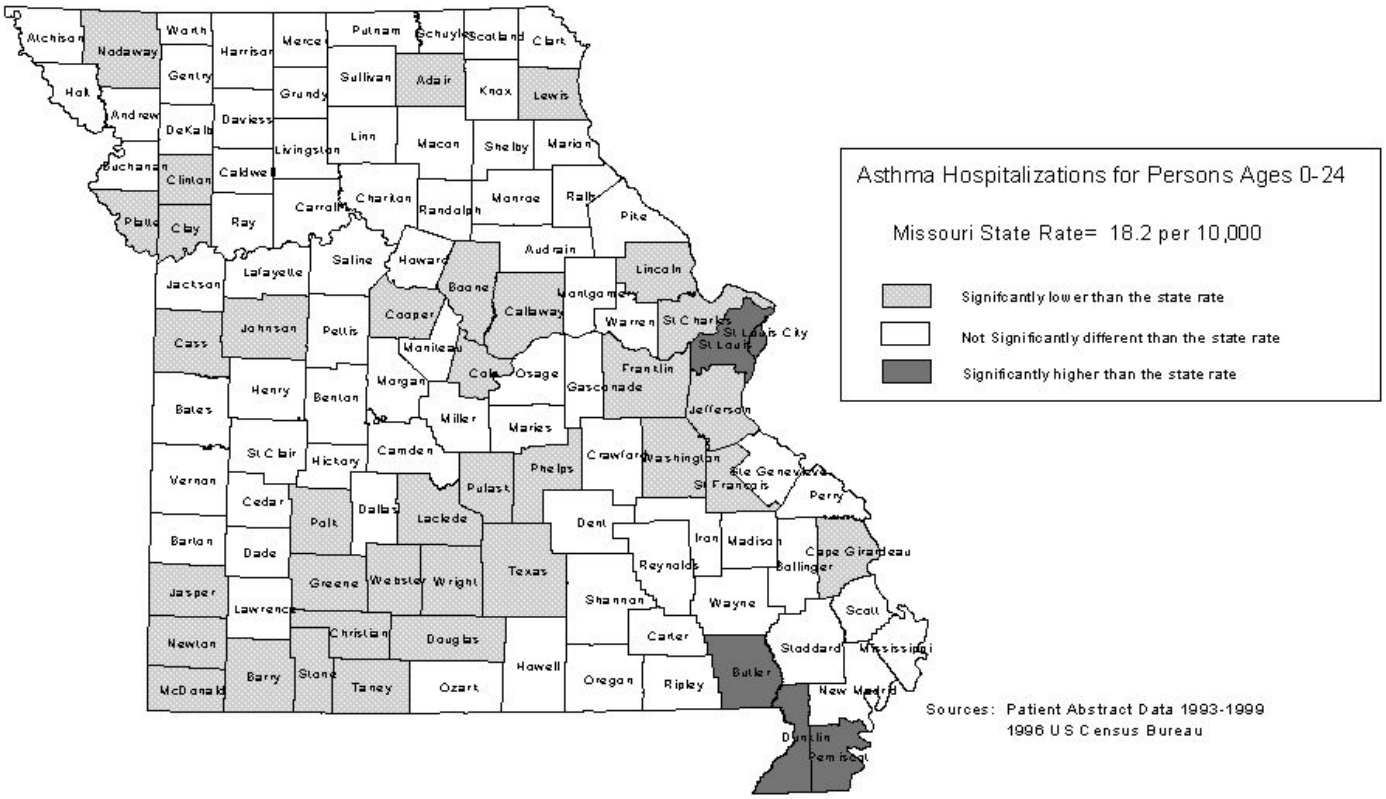
Map 1

Hospitalizations Rates for Asthma by County
Combined Years 1993-1999
Patients Age 0-24



also had rates (27.1, 29.8 and 47.3, respectively) that were significantly higher than the state rate. Thirty-five counties had a significantly lower rate. For the remaining 75 counties, hospitalization rates were not statistically different from the overall state rate. The latter are located in varying parts of the state and include both urban and rural counties.

From this study, generalizations cannot be made about asthma hospitalizations as an urban or a rural problem. St. Louis City and St. Louis County both have significantly higher asthma rates. The three counties in southeast Missouri, which also have significantly higher rates, are distinctly rural.

The rate for asthma hospitalizations in Jackson County (19.9), which includes most of Kansas City, is not significantly different from the state rate. In Greene County, which includes Springfield, the third largest metropolitan area in the state, the rate (9.4) is significantly lower than the state rate.

Race and Gender

Because Native Americans, Hispanics, and Asians make up a small percentage of the asthma patients, comparisons are made only between blacks and whites. The proportion of asthma patients age 0 through 24 breaks almost evenly between white and black patients. However, asthma hospitalization rates demonstrate even more dramatically the differences between the two populations.

Table 2 shows the number and rate of asthma hospitalizations by age group, sex, and race. The rate for

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white children and young adults is much lower than the rate for black children and young adults (10.6 per 10,000 versus 62.9, respectively). The highest rate (134.7) is for black males age 0 through 4. Black children and young adults through age 24 consistently have higher rates of hospitalizations than whites. These differences are graphically displayed in Figure 2.

Male children of both races have higher hospitalization rates for asthma than female children for all age groups up to age 14. For white children, this trend reverses in the age group 15-19. For black children, the higher rate of male asthma hospitalization does not reverse until age group 20-24. By young adulthood, females of both races tend to have higher rates of hospitalization for asthma.

In conclusion, this article highlights the demographics of children and young adults who are hospitalized for asthma. The youngest children (age 0-4) have the highest rates, especially the male children. Blacks are hospitalized at higher rates than whites for all age groups studied.

The U.S. Department of Health and Human Services in Tracking Healthy People 2010[5] sets the baseline rate of asthma hospitalization at 45.6 per 10,000 in 1998 for children under age 5. For Missouri, the rate of asthma hospitalization for the combined years 1993-1999 was 39.1, below this baseline. However, the subgroups of the Missouri population that were studied vary widely from 134.7 for black males to 17.2 for white females in the age group 0-4.

Based on this analysis alone, an effective intervention and prevention strategy should target the groups identified with the higher rates of asthma hospitalizations. Future studies should attempt to determine the factors associated with the higher levels of morbidity for these population sub-groups.

Table 2

Asthma Hospitalization by Race, Age and Gender
Discharge Years 1993-1999
Patients Age 0-24

	Race: White						Race: Black					
	Male		Female		Both Sexes		Male		Female		Both Sexes	
AGE	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	3,532	32.3	1,785	17.2	5,317	24.9	2,685	134.7	1,720	89.2	4,405	112.3
5-9	1,471	12.7	873	7.9	2,344	10.4	2,127	105.1	1,238	62.7	3,365	84.2
10-14	866	7.1	760	6.6	1,627	6.9	1,394	72.3	859	46.0	2,253	59.3
15-19	503	4.2	846	7.4	1,349	5.8	501	26.6	473	26.0	974	26.3
20-24	258	2.5	807	7.9	1,065	5.2	246	16.4	404	25.1	650	20.9
All ages (0-24)	**6,630**	**11.6**	**5,071**	**9.3**	**11,702**	**10.6**	**6,953**	**74.5**	**4,694**	**51.0**	**11,647**	**62.9**

Rates per 10,000 population

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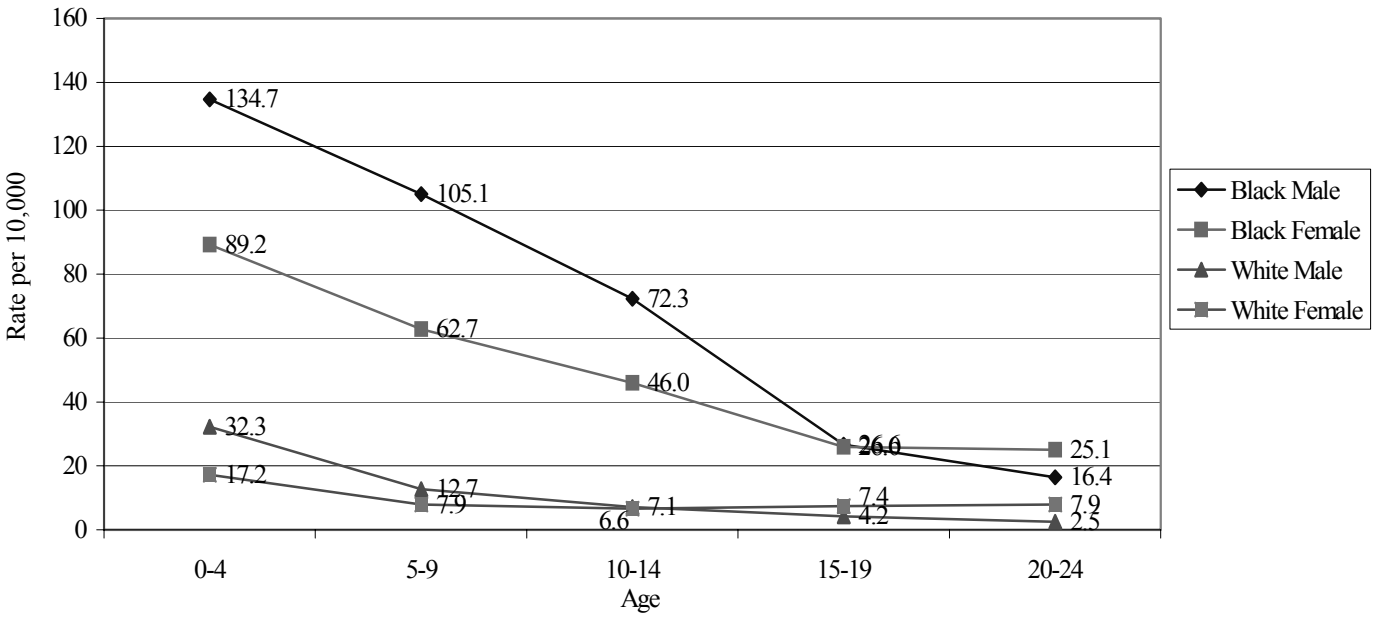
Figure 2
Discharge Years 1993-1999
Asthma Hospitalization Rates by Sex and Race
Patients Age 0-24



Footnotes:

1. National Center for Health Statistics. New Asthma Estimates: Tracking Prevalence, Health Care, and Mortality. http://www.cdc.gov/nchs/products/pubs/pubd/hestats/asthma/athma.htm. November 29, 2001.
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3. National Center for Environmental Health. At.A.Glance 1999. http://www.cdc.gov/nceh/asthma/ataglance/default.htm. November 29, 2001.
4. Missouri Department of Health. Division of Environmental Health & Communicable Disease Prevention. Asthma in Missouri. Presentation March 30, 2001.
5. U.S. Department of Health and Human Services. Tracking Healthy People 2010. Washington, DC: U.S. Government Printing Office, November 2000.

Other References:

1. Federal-State Cooperative Program for Population Estimates, U.S. Census Bureau. Population Division.

Provisional Vital Statistics for November 2001

Live births decreased in November as 5,660 Missouri babies were born compared with 6,917 one year earlier. Cumulative births for the 11- and 12- month periods ending with November also decreased. For January - November, births decreased by 1.7 percent from 70,529 to 69,352.

Deaths increased in November as 4,340 Missourians died compared with 3,985 in November 2000. For the cumulative 11- and 12- month periods ending with November, deaths increased slightly.

The **Natural increase** for November was 1,320 (5,660 births minus 4,340 deaths). This represents a decrease compared with the number for November 2000 (2,932).

Marriages increased in November as 2,937 Missouri couples married compared with 2,718 one year earlier. Marriages increased slightly for the 11 months ending with November, but decreased for the 12 months ending with November.

Dissolutions of marriage increased slightly in November, but decreased for the cumulative 11- and 12- month periods ending with November.

Infant deaths increased for all three time periods shown below. For the 12 months ending with November, the infant death rate increased from 7.2 to 7.9 per 1,000 live births.

PROVISIONAL VITAL STATISTICS FOR NOVEMBER 2001

Item	November				Jan.-Nov. cumulative				12 months ending with November				
	Number		Rate*		Number		Rate*		Number		Rate*		
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	1999	2000	2001
Live Births	6,917	5,660	15.1	12.6	70,529	69,352	13.8	13.5	76,353	75,672	14.0	13.7	13.4
Deaths	3,985	4,340	8.7	9.7	50,106	50,657	9.8	9.8	54,660	54,725	9.9	9.8	9.7
Natural increase ...	2,932	1,320	6.4	2.9	20,423	18,695	4.0	3.6	21,693	20,947	4.1	3.9	3.7
Marriages	2,718	2,937	5.9	6.6	41,673	41,733	8.1	8.1	44,533	43,785	8.0	8.0	7.8
Dissolutions	1,796	1,816	3.9	4.1	24,135	23,039	4.7	4.5	26,510	25,368	4.4	4.7	4.5
Infant deaths	31	39	4.5	6.9	507	564	7.2	8.1	552	598	7.7	7.2	7.9
Population base .... (in thousands)	...	...	5,595	5,642	...	...	5,595	5,642	...	...	5,543	5,591	5,638

* Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.